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IS 8271-5-1 (1986): Quartz Crystal Units Used for Frequency Control and Selection, Part 5: Series CX for Oscillators, Section 1: Quartz Crystal Unit Type CX-01 [LITD 5: Semiconductor and Other Electronic Components and Devices]



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“Knowledge is such a treasure which cannot be stolen”



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## Indian Standard

# SPECIFICATION FOR QUARTZ CRYSTAL UNITS USED FOR FREQUENCY CONTROL AND SELECTION

## PART 5 SERIES CX FOR OSCILLATORS

### Section 1 Quartz Crystal Unit Type CX-01

**0. General** — This standard shall be read in conjunction with IS : 8271 ( Part 1 )-1981 'Specification for quartz crystal units used for frequency control and selection: Part 1 General requirements and tests ( first revision )'.

**1. Outline and Dimensions** — Holder outline shall conform to type CX [ see IS : 4570 ( Part 6 )-1984 Specification for crystal unit holders: Part 6 Metal, solder seal, two pin crystal unit holder type CX ].

**2. Marking** — See 8 of IS : 8271 ( Part 1 )-1981.

**3. Construction and Workmanship** — See 7 of IS : 8271 ( Part 1 )-1981.

#### 4. Test Schedule and Detail Requirements

**4.1 General Conditions for Test** — See 9.2 of IS : 8271 ( Part 1 )-1981.

**4.2 Test Schedule** — The sequence and grouping of type, routine and acceptance tests shall be as per 9.1 of IS : 8271 ( Part 1 )-1981.

**4.3 Detail Requirements** — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL OF QUARTZ CRYSTAL UNIT TYPE CX-01

SI No.	Characteristics	Requirements
(1)	(2)	(3)
i)	Type of holder	CX ( see 1 )
ii)	Frequency range	2.9 to 25 MHz
iii)	Frequency tolerance:	
	a) Primary operating temperature range	$\pm 20$ ppm
	b) Secondary operating temperature range	$\pm 30$ ppm
iv)	Load capacitance	$30 \pm 0.5$ pF
v)	Mode of oscillation	Fundamental
vi)	Temperature range:	
	a) Primary	$-40^{\circ}\text{C}$ to $+90^{\circ}\text{C}$
	b) Secondary	$-55^{\circ}\text{C}$ to $-40^{\circ}\text{C}$ and $+90^{\circ}\text{C}$ to $+105^{\circ}\text{C}$
vii)	Test set calibration values, and rated drive level	See Table 2
viii)	Capacitance, shunt	7 pF maximum
ix)	Resonance resistance	See Table 3
x)	Shock [ as per 9.15 ( Severity A ) of IS : 8271 ( Part 1 )-1981 ]	
	a) Frequency change permitted	$\pm 5$ ppm
	b) Resonance resistance change permitted	$\pm 10$ percent
xi)	Vibration [ as per 9.16.1 ( Severity A ) of IS : 8271 ( Part 1 )-1981 ]	
	a) Frequency change permitted	$\pm 5$ ppm
	b) Resonance resistance change permitted	$\pm 10$ percent
xii)	Temperature cycling:	
	a) Frequency change permitted	$\pm 5$ ppm
	b) Resonance resistance change permitted	$\pm 10$ percent
xiii)	Ageing:	
	a) Frequency change permitted	5 ppm

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TABLE 2 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[ Table 1, (vii) ]

SI No.	Frequency Range	Calibration Values			Rated Drive Level	Test Set
		Resistance	Crystal Current	Resistor Voltage Drop		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MHz	ohms	mA	volts	mW	
i)	From 2.9 to 5.1	50	10	—	$5.0 \pm 1.0$	TS-330/TSM
ii)	Over 5.1 to 7.5	22	15	—	$5.0 \pm 1.0$	
iii)	Over 7.5 to 10	13	20	—	$5.0 \pm 1.0$	
iv)	Over 10 to 25	10	—	0.22	$5.0 \pm 1.0$	TS-683/TSM

TABLE 3 RESONANCE RESISTANCE

[ Table 1, (ix) ]

SI No.	Frequency Range	Maximum Resonance Resistance
(1)	(2)	(3)
	MHz	ohms
i)	From 2.9 to 3.75	180
ii)	Over 3.75 to 4.75	120
iii)	Over 4.75 to 6	75
iv)	Over 6 to 7	50
v)	Over 7 to 10	30
vi)	Over 10 to 25	25

## EXPLANATORY NOTE

This standard ( Part 5/Sec 1 ) covers the requirements of crystal unit quartz style QC-20 of JSS 50906 ( 1971 ) 'Detail specification for crystal unit, quartz styles QC-20, QC-21, QC-22, QC-25 and QC-26, issued by the Directorate of Standardization, Ministry of Defence ( India ).

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